

TITLE

SELF LOCKING ELEVATOR BRAKE

FIELD OF THE INVENTION

5 The present invention relates to elevator braking systems and more particularly to a self locking assembly for elevator braking systems.

BACKGROUND OF THE INVENTION

10 In certain instances, an elevator car may be caused to stop between building floors due to power failure, for example, whereupon it may be necessary to lock the elevator brake to allow the exit of any passengers. It is important that elevator brake system remain in a locked condition unavailable to release by the general public.

15 It has been proposed, in elevators that use a cable brake release system actuated by a handle to make the handle removable and lock the handle with a padlock, for example, to prevent the general public from releasing the brake. In such a system, the handle may be left in place allowing the car to be moved; the handle may be misplaced or lost; or the padlock misplaced during the time the elevator system was being serviced.

20 It is an object of the present invention to produce a brake release system for elevator systems that is accessible only by trained elevator personnel.

25 Another object of the invention is to produce a self locking elevator braking system including a brake handle wherein a key is needed to release the brake handle and will automatically lock the handle against movement before the elevator mechanic leaves the vicinity of the locking system.

SUMMARY OF THE INVENTION

30 Other objectives and advantages of the invention may typically be achieved by a self locking elevator brake comprising: an elevator drive brake element rotatable between a brake reset position and a brake released position; a handle attached to said brake element for moving between a locked position wherein said brake element is in

said brake reset position and an unlocked position wherein said brake element is in said brake released position, said handle having a latch receiving aperture formed therein; and a selectively operated locking means for maintaining said handle in said locked position, said locking means including a latching plunger releasably engaging said latch receiving aperture when said handle is in said locked position.

BRIEF DESCRIPTION OF THE DRAWINGS

The above objects and advantages of the invention will become readily apparent to those skilled in the art from reading the following detailed description of a preferred embodiment of the invention when considered in the light of the accompanying drawings, in which:

Fig. 1 is a schematic perspective view of a portion of a self locking elevator braking system incorporating the features of the present invention;

Fig. 2 is a front elevational view of the braking system illustrated in Fig. 1;

Fig. 3 is a fragmentary side view of the handle illustrated in Figs. 1 and 2;

Fig. 4 is a fragmentary top plan view of the latching mechanism illustrated in Figs. 1 and 2 and an associated actuating key; and

Fig. 5 is a top plan view of the latching mechanism illustrated in Fig. 4 showing a safety switch and the handle illustrated in Fig. 3.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, there is illustrated a self locking elevator brake actuating element **10** including an elongate handle **12** having one end affixed to a brake element such as a drum **14** mounted to rotate about an axis **16**. The drum **14** is an integral portion of the elevator car drive braking system which may be in the form of the system illustrated and described in U.S. Patent 5,971,109, for example. The handle **12** is provided with a latch receiving aperture **18**, as clearly shown in Fig. 3.

Normally, the handle **12** is in a locked position within a lock assembly **20** as illustrated in Figs. 1 and 2. In this position of the handle **12**, the drum **14** is in a reset position permitting the drive to move the elevator car as long as the drive brake (not

shown) is not engaged. The lock assembly 20 includes a main housing securely mounted to a fixed surface 22, such as a cabinet or wall in the elevator control closet, for example. The lock assembly 20 includes a recess 24 for receiving a portion of the handle 12 in the region of the latch receiving aperture 18. The lock assembly 20 further includes a latching system similar in principle and structure to a standard residential or commercial door latch mechanism. In the illustrated embodiment, the latching system includes a latching plunger 26 which is normally spring biased to a closed position as clearly illustrated in Fig. 4. The latching plunger 26 is caused to be cammed inwardly toward an open position against the bias of a locking spring, not shown, by the camming action of the leading edge of the handle 12. When the outermost end of the latching plunger 26 becomes aligned with the aperture 18 of the handle 12, the latching plunger 26 is forced to its closed and locked position. The handle 12 thereupon is immobilized and locked in position and will remain in such condition until an authorized attendant inserts a key 28 into a lock cylinder 30 of the lock assembly 20 and properly unlocks the lock assembly 20 to allow the plunger 26 to be withdrawn from the locking position in the latch receiving aperture 18 of the handle 12. When the handle 12 is moved out of the recess 24, the drum 14 is rotated to a brake released position to release the drive brake and permit movement of the elevator car.

It will be appreciated that with the illustrated embodiment of the invention, a safety switch contact 32 may be mounted within the recess 24 as illustrated in Fig. 5. The safety switch contact 32 is actuated by engagement with the handle 12 in the locked position as shown in Fig. 5 to permit operation of the elevator drive. When the handle 12 is moved out of the recess 24, the safety switch contact 32 is effective to switch off the power to the elevator car drive system and will not allow the car to run other than by hand operation until the handle 12 is returned to the closed and locked position.

Further, in order to facilitate the depression of the plunger 26, a leading edge 34 of the handle 12 may be rounded or beveled to assist in camming the plunger 26 and causing the same to slide against the bias of an operating spring.

In accordance with the provisions of the patent statutes, the present invention has been described in what is considered to represent its preferred embodiment.

However, it should be understood that the invention can be practiced otherwise than as specifically illustrated and described without departing from its spirit or scope.